

Chemical Analysis Report

CEN-DIST-2022-07-13-03

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Run 10**
Request ID: **RQ-2022-07-11-30**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Matthew Bearden

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 20-JUL-2022 12:28

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Metals and Pesticides.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Cow Creek at Osteen-Maytown Road

Collection Date/Time: 07/12/2022 09:20

Field ID: G2CE0086

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2341095	EPA 200.7 Rev. 4.4	Calcium	3.49		mg/L	P416617	
		Iron	930		ug/L	P416617	
		Magnesium	0.88		mg/L	P416617	
		Potassium	0.30	U	mg/L	P416617	
		Sodium	6.3		mg/L	P416617	
		Strontium	23.3		ug/L	P416617	
		Tin	3.0	U	ug/L	P416617	
		Titanium	1.7	I	ug/L	P416617	
		Vanadium	2.0	U	ug/L	P416617	
	EPA 200.8 Rev. 5.4	Zinc	7.8	I	ug/L	P416617	
		Aluminum	301		ug/L	P416617	
		Antimony	0.050	U	ug/L	P416617	
		Arsenic	0.40		ug/L	P416617	
		Barium	7.04		ug/L	P416617	
		Beryllium	0.015	I	ug/L	P416617	
		Boron	24.3		ug/L	P416617	
		Cadmium	0.020	U	ug/L	P416617	
		Chromium	0.41	I	ug/L	P416617	
		Cobalt	0.117		ug/L	P416617	
		Copper	0.40	U	ug/L	P416617	
		Lead	0.41		ug/L	P416617	
		Manganese	7.24		ug/L	P416617	
		Molybdenum	0.15	U	ug/L	P416617	
		Nickel	0.50	U	ug/L	P416617	
		Selenium	0.20	I	ug/L	P416617	
		Silver	0.010	U	ug/L	P416617	
		Thallium	0.10	U	ug/L	P416617	
	SM 2340 B-2011	Hardness	12.3		mg/L	P416617	

Sample Location: FB

Collection Date/Time: 07/12/2022 09:26

Field ID: FB_07122022

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2341096	EPA 200.7 Rev. 4.4	Calcium	0.075	U	mg/L	P416617	
		Iron	30	U	ug/L	P416617	
		Magnesium	0.040	U	mg/L	P416617	
		Potassium	0.30	U	mg/L	P416617	
		Sodium	0.50	U	mg/L	P416617	
		Strontium	2.0	U	ug/L	P416617	
		Tin	3.0	U	ug/L	P416617	
		Titanium	0.75	U	ug/L	P416617	
		Vanadium	2.0	U	ug/L	P416617	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P416617	
		Aluminum	5.0	U	ug/L	P416617	
		Antimony	0.050	U	ug/L	P416617	
		Arsenic	0.050	U	ug/L	P416617	
		Barium	0.20	U	ug/L	P416617	
		Beryllium	0.010	U	ug/L	P416617	
		Boron	2.0	U	ug/L	P416617	
		Cadmium	0.020	U	ug/L	P416617	
		Chromium	0.40	U	ug/L	P416617	
		Cobalt	0.020	U	ug/L	P416617	
		Copper	0.40	U	ug/L	P416617	
		Lead	0.20	U	ug/L	P416617	
		Manganese	0.10	U	ug/L	P416617	
		Molybdenum	0.15	U	ug/L	P416617	
		Nickel	0.50	U	ug/L	P416617	
		Selenium	0.20	U	ug/L	P416617	
		Silver	0.010	U	ug/L	P416617	
		Thallium	0.10	U	ug/L	P416617	
	SM 2340 B-2011	Hardness	0.35	U	mg/L	P416617	

Sample Location: Sweetwater Creek @ US of DeLeon St.

Collection Date/Time: 07/12/2022 10:40

Field ID: G2CE0119

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2341093	EPA 8321B	2,4-D	0.016		ug/L	P416589	
		Acesulfame K	0.15	I	ug/L	P416474	
		2,4,5-T	0.0040	U	ug/L	P416589	
		AMPA	0.34	I	ug/L	P416474	
		Acetaminophen	0.0080	U	ug/L	P416589	
		Acetamiprid	0.0020	U	ug/L	P416589	
		Endothall	0.25	U	ug/L	P416474	
		Glufosinate	0.10	U	ug/L	P416474	
		Glyphosate	1.1		ug/L	P416474	
		Afidopyropen	0.0020	U	ug/L	P416589	
		Bentazon	0.27		ug/L	P416589	
		Sucralose	2.6		ug/L	P416474	
		Benzovindiflupyr	0.0020	U	ug/L	P416589	
		Carbamazepine	0.0073		ug/L	P416589	
		Clothianidin	0.020		ug/L	P416589	
		Dinotefuran	0.0069	I	ug/L	P416589	
		Diuron	0.0026	I	ug/L	P416589	
		Fenuron	0.032	U	ug/L	P416589	
		Fluridone	0.011		ug/L	P416589	
		Imazapyr	0.037		ug/L	P416589	
		Hydrocodone	0.0020	U	ug/L	P416589	
		Ibuprofen	0.080	U	ug/L	P416589	
		Imidacloprid	0.027		ug/L	P416589	
		Linuron	0.0040	U	ug/L	P416589	
		Mandestrobin	0.0020	U	ug/L	P416589	
		MCPP	0.0041	I	ug/L	P416589	
		Naproxen	0.0080	U	ug/L	P416589	
		Primidone	0.022		ug/L	P416589	
		Pyraclostrobin	0.0020	U	ug/L	P416589	
		Silvex	0.0040	U	ug/L	P416589	
		Thiamethoxam	0.0020	U	ug/L	P416589	
		Tolfenpyrad	0.0020	U	ug/L	P416589	
		Triclopyr	0.0040	U	ug/L	P416589	

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to high concentration of parameter in the spiked sample.

Sample Location: Sweetwater Creek @ 35m US of Cress Run

Collection Date/Time: 07/12/2022 10:58

Field ID: G2CE0139

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2341094	EPA 8321B	2,4-D	0.061		ug/L	P416589	
		Acesulfame K	0.14	I	ug/L	P416474	
		2,4,5-T	0.0040	U	ug/L	P416589	
		AMPA	0.40		ug/L	P416474	
		Acetaminophen	0.0080	U	ug/L	P416589	
		Acetamiprid	0.0020	U	ug/L	P416589	
		Endothall	0.25	U	ug/L	P416474	
		Glufosinate	0.10	U	ug/L	P416474	
		Glyphosate	1.3		ug/L	P416474	
		Afidopyropen	0.0020	U	ug/L	P416589	
		Bentazon	0.28		ug/L	P416589	
		Sucralose	2.6		ug/L	P416474	
		Benzovindiflupyr	0.0020	U	ug/L	P416589	
		Carbamazepine	0.0064		ug/L	P416589	
		Clothianidin	0.017		ug/L	P416589	
		Dinotefuran	0.0058	I	ug/L	P416589	
		Diuron	0.0020	U	ug/L	P416589	
		Fenuron	0.032	U	ug/L	P416589	
		Fluridone	0.013		ug/L	P416589	
		Imazapyr	0.039		ug/L	P416589	
		Hydrocodone	0.0020	U	ug/L	P416589	
		Ibuprofen	0.080	U	ug/L	P416589	
		Imidacloprid	0.061		ug/L	P416589	
		Linuron	0.0040	U	ug/L	P416589	
		Mandestrobin	0.0020	U	ug/L	P416589	
		MCPP	0.0046	I	ug/L	P416589	
		Naproxen	0.0080	U	ug/L	P416589	
		Primidone	0.017		ug/L	P416589	
		Pyraclostrobin	0.0020	U	ug/L	P416589	
		Silvex	0.0040	U	ug/L	P416589	
		Thiamethoxam	0.0020	U	ug/L	P416589	
		Tolfenpyrad	0.0020	U	ug/L	P416589	
		Triclopyr	0.0040	U	ug/L	P416589	

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to high concentration of parameter in the spiked sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P416617

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P416617

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 8321B

Batch ID: P416474

Component	Result	Code	Units
Acesulfame K	0.10	U	ug/L
AMPA	0.10	U	ug/L
Endothall	0.25	U	ug/L
Glufosinate	0.10	U	ug/L
Glyphosate	0.10	U	ug/L
Sucralose	0.010	U	ug/L

Reference Method: EPA 8321B

Batch ID: P416589

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
2,4,5-T	0.0040	U	ug/L
Acetaminophen	0.0080	U	ug/L
Acetamiprid	0.0020	U	ug/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P416589

Component	Result	Code	Units
Afidopyropen	0.0020	U	ug/L
Bentazon	8.0E-04	U	ug/L
Benzovindiflupyr	0.0020	U	ug/L
Carbamazepine	8.0E-04	U	ug/L
Clothianidin	0.0020	U	ug/L
Dinotefuran	0.0020	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.032	U	ug/L
Fluridone	8.0E-04	U	ug/L
Hydrocodone	0.0020	U	ug/L
Ibuprofen	0.080	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
Mandestrobin	0.0020	U	ug/L
MCPP	0.0040	U	ug/L
Naproxen	0.0080	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Silvex	0.0040	U	ug/L
Thiamethoxam	0.0020	U	ug/L
Tolfenpyrad	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P416617

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	100		P	85 - 115
Iron	101		P	85 - 115
Magnesium	99.3		P	85 - 115
Potassium	104		P	85 - 115
Sodium	103		P	85 - 115
Strontium	106		P	85 - 115
Tin	99.9		P	85 - 115
Titanium	104		P	85 - 115
Vanadium	103		P	85 - 115
Zinc	99.1		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P416617

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	104		P	85 - 115
Antimony	105		P	85 - 115
Arsenic	101		P	85 - 115
Barium	97.6		P	85 - 115
Beryllium	95.3		P	85 - 115
Boron	103		P	85 - 115
Cadmium	99.4		P	85 - 115
Chromium	102		P	85 - 115
Cobalt	103		P	85 - 115
Copper	97.9		P	85 - 115
Lead	99.5		P	85 - 115
Manganese	104		P	85 - 115
Molybdenum	101		P	85 - 115
Nickel	101		P	85 - 115
Selenium	102		P	85 - 115
Silver	104		P	85 - 115
Thallium	102		P	85 - 115

Reference Method: EPA 8321B

Batch ID: P416474

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	88.1		P	40 - 150
AMPA	113		P	40 - 150
Endothall	80.3		P	40 - 150
Glufosinate	111		P	40 - 150
Glyphosate	108		P	40 - 150
Sucralose	105		P	40 - 150

Reference Method: EPA 8321B

Batch ID: P416589

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	83.4		P	40 - 150
2,4,5-T	91.6		P	40 - 150
Acetaminophen	94.6		P	30 - 150
Acetamiprid	96.4		P	40 - 150

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B

Batch ID: P416589

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Afidopyropen	52.6		P	30 - 150
Bentazon	106		P	30 - 150
Benzovindiflupyr	95.8		P	40 - 150
Carbamazepine	101		P	40 - 150
Clothianidin	114		P	40 - 150
Dinotefuran	110		P	40 - 150
Diuron	87.2		P	40 - 150
Fenuron	103		P	40 - 150
Fluridone	97.1		P	40 - 150
Hydrocodone	100		P	40 - 150
Ibuprofen	86.1		P	40 - 150
Imazapyr	108		P	40 - 150
Imidacloprid	98.1		P	40 - 150
Linuron	94.7		P	40 - 150
Mandestrobin	88.3		P	40 - 150
MCPP	95.9		P	40 - 150
Naproxen	87.0		P	40 - 150
Primidone	111		P	40 - 150
Pyraclostrobin	93.9		P	40 - 150
Silvex	83.7		P	40 - 150
Thiamethoxam	107		P	40 - 150
Tolfenpyrad	62.3		P	30 - 150
Triclopyr	118		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P416617

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2340504	Calcium	98.9		P	80 - 120
2340504	Iron	102		P	80 - 120
2340504	Magnesium	103		P	80 - 120
2340504	Potassium	101		P	80 - 120
2340504	Sodium	101		P	80 - 120
2340504	Strontium	107		P	80 - 120
2340504	Tin	99.3		P	80 - 120
2340504	Titanium	106		P	80 - 120
2340504	Vanadium	105		P	80 - 120
2340504	Zinc	101		P	80 - 120
2340703	Calcium	96.4		P	80 - 120
2340703	Iron	99.9	98.3	P/P	80 - 120
2340703	Magnesium	98.6	96.8	P/P	80 - 120
2340703	Potassium	98.9	99.4	P/P	80 - 120
2340703	Sodium	103	101	P/P	80 - 120
2340703	Strontium	104	104	P/P	80 - 120
2340703	Tin	96.3	95.8	P/P	80 - 120
2340703	Titanium	101	100	P/P	80 - 120
2340703	Vanadium	101	100	P/P	80 - 120
2340703	Zinc	95.1	94.2	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P416617

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2340504	Aluminum	100		P	80 - 120
2340504	Antimony	104		P	80 - 120
2340504	Arsenic	99.4		P	80 - 120
2340504	Barium	98.2		P	80 - 120
2340504	Beryllium	98.0		P	80 - 120
2340504	Boron	98.0		P	80 - 120
2340504	Cadmium	99.2		P	80 - 120
2340504	Chromium	98.3		P	80 - 120
2340504	Cobalt	99.3		P	80 - 120
2340504	Copper	95.2		P	80 - 120
2340504	Lead	98.3		P	80 - 120
2340504	Manganese	100		P	80 - 120
2340504	Molybdenum	99.1		P	80 - 120
2340504	Nickel	97.2		P	80 - 120
2340504	Selenium	99.8		P	80 - 120
2340504	Silver	99.4		P	80 - 120
2340504	Thallium	101		P	80 - 120
2340703	Aluminum	103	102	P/P	80 - 120
2340703	Antimony	107	104	P/P	80 - 120
2340703	Arsenic	99.3	98.6	P/P	80 - 120
2340703	Barium	99.1	104	P/P	80 - 120
2340703	Beryllium	93.4	92.5	P/P	80 - 120
2340703	Boron	108	105	P/P	80 - 120
2340703	Cadmium	103	100	P/P	80 - 120
2340703	Chromium	102	100	P/P	80 - 120
2340703	Cobalt	101	99.5	P/P	80 - 120
2340703	Copper	93.9	92.3	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P416617

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2340703	Lead	100	99.0	P/P	80 - 120
2340703	Manganese	104	102	P/P	80 - 120
2340703	Molybdenum	103	102	P/P	80 - 120
2340703	Nickel	98.4	97.4	P/P	80 - 120
2340703	Selenium	97.0	97.6	P/P	80 - 120
2340703	Silver	104	101	P/P	80 - 120
2340703	Thallium	104	103	P/P	80 - 120

Reference Method: EPA 8321B

Batch ID: P416474

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2340387	Acesulfame K	75.9	76.4	P/P	40 - 150
2340387	AMPA	96.9	97.2	P/P	40 - 150
2340387	Endothall	83.3	81.1	P/P	40 - 150
2340387	Glufosinate	72.7	70.8	P/P	40 - 150
2340387	Glyphosate	84.2	88.5	P/P	40 - 150
2340387	Sucralose	98.5	99.2	P/P	40 - 150

Reference Method: EPA 8321B

Batch ID: P416589

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2340862	2,4-D	91.9	83.2	P/P	40 - 150
2340862	2,4,5-T	70.5	72.6	P/P	40 - 150
2340862	Acetaminophen	111	94.4	P/P	30 - 150
2340862	Acetamiprid	54.5	51.5	P/P	40 - 150
2340862	Afidopyropen	59.3	49.9	P/P	30 - 150
2340862	Benzovindiflupyr	88.3	82.3	P/P	40 - 150
2340862	Carbamazepine	81.3	79.7	P/P	40 - 150
2340862	Clothianidin	120	102	P/P	40 - 150
2340862	Dinotefuran	143	127	P/P	40 - 150
2340862	Diuron	57.4	60.3	P/P	40 - 150
2340862	Fenuron	70.0	67.7	P/P	40 - 150
2340862	Fluridone	76.8	67.0	P/P	40 - 150
2340862	Hydrocodone	90.9	89.6	P/P	40 - 150
2340862	Ibuprofen	62.1	60.7	P/P	40 - 150
2340862	Imidacloprid	132	129	P/P	40 - 150
2340862	Linuron	74.8	65.2	P/P	40 - 150
2340862	Mandestrobin	74.3	67.5	P/P	40 - 150
2340862	MCP	84.7	78.5	P/P	40 - 150
2340862	Naproxen	61.5	65.7	P/P	40 - 150
2340862	Primidone	102	105	P/P	40 - 150
2340862	Pyraclostrobin	83.6	76.3	P/P	40 - 150
2340862	Silvex	96.2	88.8	P/P	40 - 150
2340862	Thiamethoxam	146	133	P/P	40 - 150
2340862	Tolfenpyrad	50.2	50.1	P/P	30 - 150
2340862	Triclopyr	81.8	77.6	P/P	40 - 150

Quality Assurance Report

Precision

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P416617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2340703	Calcium	1.24	Spike	P	0 - 20
2340703	Iron	1.64	Spike	P	0 - 20
2340703	Magnesium	1.06	Spike	P	0 - 20
2340703	Potassium	0.470	Spike	P	0 - 20
2340703	Sodium	0.831	Spike	P	0 - 20
2340703	Strontium	0.676	Spike	P	0 - 20
2340703	Tin	0.586	Spike	P	0 - 20
2340703	Titanium	0.914	Spike	P	0 - 20
2340703	Vanadium	0.936	Spike	P	0 - 20
2340703	Zinc	0.989	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P416617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2340703	Aluminum	1.59	Spike	P	0 - 20
2340703	Antimony	2.89	Spike	P	0 - 20
2340703	Arsenic	0.715	Spike	P	0 - 20
2340703	Barium	4.89	Spike	P	0 - 20
2340703	Beryllium	1.02	Spike	P	0 - 20
2340703	Boron	2.34	Spike	P	0 - 20
2340703	Cadmium	2.89	Spike	P	0 - 20
2340703	Chromium	1.11	Spike	P	0 - 20
2340703	Cobalt	1.76	Spike	P	0 - 20
2340703	Copper	1.68	Spike	P	0 - 20
2340703	Lead	1.14	Spike	P	0 - 20
2340703	Manganese	1.49	Spike	P	0 - 20
2340703	Molybdenum	0.793	Spike	P	0 - 20
2340703	Nickel	0.995	Spike	P	0 - 20
2340703	Selenium	0.570	Spike	P	0 - 20
2340703	Silver	2.74	Spike	P	0 - 20
2340703	Thallium	0.749	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P416474

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2340387	Acesulfame K	0.698	Spike	P	0 - 30
2340387	AMPA	0.270	Spike	P	0 - 30
2340387	Endothall	2.66	Spike	P	0 - 30
2340387	Glufosinate	2.62	Spike	P	0 - 30
2340387	Glyphosate	5.07	Spike	P	0 - 30
2340387	Sucralose	0.509	Spike	P	0 - 30

Reference Method: EPA 8321B

Batch ID: P416589

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report

Precision

Reference Method: EPA 8321B

Batch ID: P416589

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2340862	2,4-D	7.77	Spike	P	0 - 30
2340862	2,4,5-T	2.92	Spike	P	0 - 30
2340862	Acetaminophen	15.9	Spike	P	0 - 30
2340862	Acetamiprid	5.63	Spike	P	0 - 30
2340862	Afidopyropen	17.3	Spike	P	0 - 30
2340862	Bentazon	16.0	Spike	P	0 - 30
2340862	Benzovindiflupyr	7.06	Spike	P	0 - 30
2340862	Carbamazepine	1.91	Spike	P	0 - 30
2340862	Clothianidin	16.5	Spike	P	0 - 30
2340862	Dinotefuran	10.8	Spike	P	0 - 30
2340862	Diuron	5.00	Spike	P	0 - 30
2340862	Fenuron	3.30	Spike	P	0 - 30
2340862	Fluridone	13.6	Spike	P	0 - 30
2340862	Hydrocodone	1.41	Spike	P	0 - 30
2340862	Ibuprofen	2.29	Spike	P	0 - 30
2340862	Imazapyr	0.309	Spike	P	0 - 30
2340862	Imidacloprid	1.71	Spike	P	0 - 30
2340862	Linuron	13.6	Spike	P	0 - 30
2340862	Mandestrobin	9.52	Spike	P	0 - 30
2340862	MCPP	7.68	Spike	P	0 - 30
2340862	Naproxen	6.56	Spike	P	0 - 30
2340862	Primidone	2.93	Spike	P	0 - 30
2340862	Pyraclostrobin	9.05	Spike	P	0 - 30
2340862	Silvex	7.98	Spike	P	0 - 30
2340862	Thiamethoxam	9.48	Spike	P	0 - 30
2340862	Tolfenpyrad	0.332	Spike	P	0 - 30
2340862	Triclopyr	5.31	Spike	P	0 - 30

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 2341093

Field Sample ID: G2CE0119

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	120	P	30 - 160
EPA 8321B	Acetaminophen-d4	121	P	30 - 160
EPA 8321B	Carbamazepine-d10	109	P	30 - 160
EPA 8321B	Diuron-d6	85.8	P	30 - 160
EPA 8321B	Endothall-d6	62.5	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	85.1	P	30 - 160
EPA 8321B	Ibuprofen-d3	77.9	P	30 - 160
EPA 8321B	Primidone-d5	106	P	30 - 160
EPA 8321B	Sucralose-d6	100	P	30 - 160

Lab Sample ID: 2341094

Field Sample ID: G2CE0139

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	98.6	P	30 - 160
EPA 8321B	Acetaminophen-d4	105	P	30 - 160
EPA 8321B	Carbamazepine-d10	93.9	P	30 - 160
EPA 8321B	Diuron-d6	64.9	P	30 - 160
EPA 8321B	Endothall-d6	68.7	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	88.9	P	30 - 160
EPA 8321B	Ibuprofen-d3	66.3	P	30 - 160
EPA 8321B	Primidone-d5	94.1	P	30 - 160
EPA 8321B	Sucralose-d6	103	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A113489

Included Lab Sample IDs: 2341093, 2341094

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	110	120	P/P	60 - 160
Endothall	61.4	83.3	P/P	60 - 160
Glufosinate	83.7	92.6	P/P	60 - 160
Glyphosate	106	111	P/P	60 - 160

Reference Method: EPA 8321B

Run ID: A113497

Included Lab Sample IDs: 2341093, 2341094

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	86.4	83.7	P/P	60 - 160
Sucralose	102	103	P/P	60 - 160

Reference Method: EPA 8321B

Run ID: A113508

Included Lab Sample IDs: 2341093, 2341094

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	95.5	93.6	P/P	50 - 150
2,4,5-T	111	97.1	P/P	50 - 150
Acetaminophen	99.9	99.9	P/P	60 - 160
Acetamiprid	107	103	P/P	50 - 150
Afidopyropen	103	99.8	P/P	50 - 150
Bentazon	111	95.0	P/P	50 - 160
Benzovindiflupyr	105	103	P/P	50 - 150
Carbamazepine	99.7	96.9	P/P	60 - 150
Clothianidin	103	97.0	P/P	60 - 150
Dinotefuran	105	102	P/P	50 - 150
Diuron	94.3	97.8	P/P	60 - 160
Fenuron	97.2	100	P/P	60 - 150
Fluridone	113	107	P/P	60 - 160
Hydrocodone	101	101	P/P	60 - 150
Ibuprofen	120	110	P/P	50 - 160
Imazapyr	98.3	96.0	P/P	50 - 150
Imidacloprid	103	104	P/P	60 - 150
Linuron	103	109	P/P	60 - 150
Mandestrobin	101	101	P/P	50 - 150
MCPP	108	99.2	P/P	50 - 150
Naproxen	131	147	P/P	50 - 160
Primidone	105	97.4	P/P	60 - 150
Pyraclostrobin	103	104	P/P	60 - 150
Silvex	95.4	93.4	P/P	50 - 150
Thiamethoxam	97.0	101	P/P	50 - 150
Tolfenpyrad	102	99.5	P/P	60 - 150
Triclopyr	119	113	P/P	50 - 150

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A113518

Included Lab Sample IDs: 2341095, 2341096

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A113518

Included Lab Sample IDs: 2341095, 2341096

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	97.9	P/P	90 - 110
Aluminum	98.5	98.8	P/P	90 - 110
Antimony	101	100	P/P	90 - 110
Antimony	101	101	P/P	90 - 110
Arsenic	97.6	96.8	P/P	90 - 110
Arsenic	99.3	98.0	P/P	90 - 110
Beryllium	101	97.5	P/P	90 - 110
Beryllium	94.1	95.0	P/P	90 - 110
Boron	98.2	95.3	P/P	90 - 110
Boron	98.8	99.2	P/P	90 - 110
Cadmium	101	99.7	P/P	90 - 110
Cadmium	99.4	99.5	P/P	90 - 110
Chromium	96.7	95.1	P/P	90 - 110
Chromium	98.4	97.6	P/P	90 - 110
Cobalt	101	99.3	P/P	90 - 110
Cobalt	98.9	97.8	P/P	90 - 110
Copper	93.9	93.3	P/P	90 - 110
Copper	97.0	94.9	P/P	90 - 110
Lead	96.4	96.1	P/P	90 - 110
Lead	96.4	95.6	P/P	90 - 110
Manganese	100	98.6	P/P	90 - 110
Manganese	100	100	P/P	90 - 110
Molybdenum	98.0	96.8	P/P	90 - 110
Molybdenum	99.4	98.2	P/P	90 - 110
Nickel	96.8	95.2	P/P	90 - 110
Nickel	98.5	97.1	P/P	90 - 110
Selenium	101	98.8	P/P	90 - 110
Selenium	98.0	98.6	P/P	90 - 110
Silver	102	102	P/P	90 - 110
Silver	103	102	P/P	90 - 110
Thallium	98.4	97.9	P/P	90 - 110
Thallium	98.9	98.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A113519

Included Lab Sample IDs: 2341095, 2341096

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	93.6	94.1	P/P	90 - 110
Barium	94.1	93.7	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A113542

Included Lab Sample IDs: 2341095, 2341096

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	96.2	97.3	P/P	90 - 110
Calcium	96.8	97.2	P/P	90 - 110
Iron	96.4	100	P/P	90 - 110
Iron	98.5	98.0	P/P	90 - 110
Magnesium	95.6	99.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A113542

Included Lab Sample IDs: 2341095, 2341096

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Magnesium	97.4	97.1	P/P	90 - 110
Potassium	100	99.9	P/P	90 - 110
Potassium	98.6	103	P/P	90 - 110
Sodium	98.8	101	P/P	90 - 110
Sodium	99.4	98.9	P/P	90 - 110
Strontium	105	106	P/P	90 - 110
Strontium	106	105	P/P	90 - 110
Tin	96.9	98.0	P/P	90 - 110
Tin	98.7	101	P/P	90 - 110
Titanium	102	100	P/P	90 - 110
Titanium	99.9	104	P/P	90 - 110
Vanadium	101	99.1	P/P	90 - 110
Vanadium	102	103	P/P	90 - 110
Zinc	96.5	96.5	P/P	90 - 110
Zinc	97.7	101	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 200.7 Rev. 4.4	Calcium	100	98.9	96.4			1.24
	Iron	101	102	99.9	98.3		1.64
	Magnesium	99.3	103	98.6	96.8		1.06
	Potassium	104	101	98.9	99.4		0.470
	Sodium	103	101	103	101		0.831
	Strontium	106	107	104	104		0.676
	Tin	99.9	99.3	96.3	95.8		0.586
	Titanium	104	106	101	100		0.914
	Vanadium	103	105	101	100		0.936
	Zinc	99.1	101	95.1	94.2		0.989
EPA 200.8 Rev. 5.4	Aluminum	104	100	103	102		1.59
	Antimony	105	104	107	104		2.89
	Arsenic	101	99.4	99.3	98.6		0.715
	Barium	97.6	99.1	104	98.2		4.89
	Beryllium	95.3	98.0	93.4	92.5		1.02
	Boron	103	98.0	108	105		2.34
	Cadmium	99.4	99.2	103	100		2.89
	Chromium	102	98.3	102	100		1.11
	Cobalt	103	99.3	101	99.5		1.76
	Copper	97.9	95.2	93.9	92.3		1.68
	Lead	99.5	98.3	100	99.0		1.14
	Manganese	104	100	104	102		1.49
	Molybdenum	101	99.1	103	102		0.793
	Nickel	101	97.2	98.4	97.4		0.995
	Selenium	102	99.8	97.0	97.6		0.570
	Silver	104	99.4	104	101		2.74
	Thallium	102	101	104	103		0.749
EPA 8321B	2,4-D	83.4	91.9	83.2			7.77
	2,4,5-T	91.6	70.5	72.6			2.92
	Acesulfame K	88.1	75.9	76.4			0.698
	Acetaminophen	94.6	111	94.4			15.9
	Acetamiprid	96.4	54.5	51.5			5.63
	Afidopyropen	52.6	59.3	49.9			17.3
	AMPA	113	96.9	97.2			0.270
	Bentazon	106					16.0
	Benzovindiflupyr	95.8	88.3	82.3			7.06
	Carbamazepine	101	81.3	79.7			1.91
	Clothianidin	114	120	102			16.5
	Dinotefuran	110	143	127			10.8
	Diuron	87.2	57.4	60.3			5.00
	Endothall	80.3	83.3	81.1			2.66
	Fenuron	103	70.0	67.7			3.30
	Fluridone	97.1	76.8	67.0			13.6
	Glufosinate	111	72.7	70.8			2.62
	Glyphosate	108	84.2	88.5			5.07
	Hydrocodone	100	90.9	89.6			1.41
	Ibuprofen	86.1	62.1	60.7			2.29
	Imazapyr	108					0.309
	Imidacloprid	98.1	132	129			1.71
	Linuron	94.7	74.8	65.2			13.6
	Mandestrobin	88.3	74.3	67.5			9.52
	MCPP	95.9	84.7	78.5			7.68
	Naproxen	87.0	61.5	65.7			6.56
	Primidone	111	102	105			2.93

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision SMP	MS
			LCS			
EPA 8321B	Pyraclostrobin	93.9	83.6	76.3		9.05
	Silvex	83.7	96.2	88.8		7.98
	Sucralose	105	98.5	99.2		0.509
	Thiamethoxam	107	146	133		9.48
	Tolfenpyrad	62.3	50.2	50.1		0.332
	Triclopyr	118	81.8	77.6		5.31

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2341095, 2341096
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2341095, 2341096
EPA 8321B	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2341093, 2341094
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2341095, 2341096

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 200.7 Rev. 4.4	07/13/2022	07/14/2022 09:59	Mackenzie Hunt	07/15/2022 19:37	McKinley C Carter	2341096
	07/13/2022	07/14/2022 09:59	Mackenzie Hunt	07/15/2022 23:55	McKinley C Carter	2341095
EPA 200.8 Rev. 5.4	07/13/2022	07/14/2022 09:59	Mackenzie Hunt	07/14/2022 16:08	Megan Whitefoot	2341096
	07/13/2022	07/14/2022 09:59	Mackenzie Hunt	07/14/2022 19:45	Megan Whitefoot	2341095
	07/13/2022	07/14/2022 09:59	Mackenzie Hunt	07/15/2022 02:46	Emily M Philpot	2341096
	07/13/2022	07/14/2022 09:59	Mackenzie Hunt	07/15/2022 04:23	Emily M Philpot	2341095
	07/13/2022	07/13/2022 13:30	Umesh Chiluwal	07/13/2022 17:38	Umesh Chiluwal	2341093
EPA 8321B	07/13/2022	07/13/2022 13:30	Umesh Chiluwal	07/13/2022 17:51	Umesh Chiluwal	2341094
	07/13/2022	07/13/2022 13:30	Umesh Chiluwal	07/14/2022 04:57	Umesh Chiluwal	2341093
	07/13/2022	07/13/2022 13:30	Umesh Chiluwal	07/14/2022 05:12	Umesh Chiluwal	2341094
	07/13/2022	07/14/2022 10:00	Hoor Shaik	07/15/2022 05:37	Juyoung Kim	2341093
	07/13/2022	07/14/2022 10:00	Hoor Shaik	07/15/2022 05:57	Juyoung Kim	2341094
	07/13/2022	07/14/2022 10:00	Hoor Shaik	07/15/2022 10:28	Juyoung Kim	2341093
	07/13/2022	07/14/2022 10:00	Hoor Shaik	07/15/2022 10:49	Juyoung Kim	2341094
	07/13/2022			07/15/2022 19:37	McKinley C Carter	2341096
SM 2340 B-2011	07/13/2022			07/15/2022 23:55	McKinley C Carter	2341095